IN THE CLAIMS

1. (currently amended) A method of enhancing the production of one or more of gamma-producing CD 8+, CD 4+ T cells and cytotoxic T lymphocytes against hepatitis B virus that comprises; ~~A method of treating chronic hepatitis comprising~~

(a) administering to a patient chronically infected with hepatitis B virus a T cell-stimulating amount of a vaccine comprising immunogenic particles dispersed in a pharmaceutically acceptable diluent emulsion that includes an adjuvant comprised of a 2-[(R)-3-tetra-decanoyloxytetradecanoylamino]-ethyl-2-deoxy-4-O-phosphono-3-O-[(R)-3-tetradecanoyloxytetra-decanoyl]-2-[(R)-3-tetra-decanoyloxytetradecanoyl-amino]-p-D-glucopyranoside triethylammonium salt, said immunogenic particles comprising recombinant hepatitis B core (HBc) chimeric protein molecules, said chimeric protein molecules being up to about 550 amino acid residues in length and containing

(i) an HBc sequence of at least about 125 of the N-terminal 165 amino acid residues of the HBc molecule that includes the HBc sequence of residue positions 4 through about 75 and about 85 through about 140, and includes an insert in the HBc immunodominant loop, said insert having a length of one to about 40 amino acid residues containing one or more chemically non-reactive heterologous amino acid residues that render the immunogenic particles less antigenic than the native HBc particles,

(ii) one or both of (a') one to three cysteine residues at an amino acid position of the chimer molecule corresponding to amino acid position -20 to about +1 from the

N-terminus of the HBc sequence of SEQ ID NO:1 [N-terminal cysteine residue(s)] in a sequence other than that of the HBc precore sequence and (b') one to about three cysteine residues toward the C-terminus of the molecule from the C-terminal residue of the HBc sequence and within about 30 residues from the C-terminus of the chimer molecule [C-terminal cysteine residue(s)],

said chimer molecule (a') containing no more than about 5 percent conservatively substituted amino acid residues in the HBc sequence relative to SEQ ID NO:1-6 from position 2 through 165, (b') having one or both HBc cysteine residues at positions 48 and 107 replaced by another residue, while the HBc cysteine at residue at position 61 is present, and (c') self-assembling into particles that upon expression in a host cell are substantially free of binding to nucleic acids, and

said particles being more stable than are particles formed from otherwise identical HBc chimer molecules that are free of any above-mentioned C-terminal cysteine residue(s) or N-terminal cysteine residue(s) or in which a C-terminal or an N-terminal cysteine residue(s) present in a contemplated chimer molecule is(are) replaced by another residue; and

(b) maintaining said patient for a time sufficient to induce T cells activated against HBc.

2 - 17. (cancelled)

18. (currently amended) A method of enhancing the production of one or more of gamma-producing CD 8+, CD 4+ T cells and cytotoxic T lymphocytes against hepatitis B virus that comprises; ~~A method of treating chronic hepatitis comprising~~

administering to a patient having a chronic hepatitis B virus infection a T cell-stimulating amount of vaccine comprised of an immunogenic effective amount of immunogenic particles dispersed in a pharmaceutically acceptable diluent emulsion that includes an adjuvant comprised of a 2-[(R)-3-tetra-decanoyloxytetradecanoyl-amino]-ethyl-2-deoxy-4-O-phosphono-3-O-[(R)-3-tetradecanoyloxytetra-decanoyl]-2-[(R)-3-tetra-decanoyloxytetradecanoyl-amino]-p-D-glucopyranoside triethylammonium salt, said immunogenic particles being comprised of recombinant hepatitis B virus core (HBc) protein chimer molecules that have a length of about 135 to about 525 amino acid residues and contain four peptide-linked amino acid residue sequence domains from the N-terminus that are denominated Domains I, II, III and IV, wherein

(i) Domain I comprises about 71 to about 110 amino acid residues whose sequence includes (a') at least the sequence of the residues of position 4 through position 75 of HBc, and (b') zero to three cysteine residues at an amino acid position of the chimer molecule corresponding to amino acid position -20 to about +1 from the N-terminus of the HBc sequence of SEQ ID NO:1 [N-terminal cysteine residue(s)] in a sequence other than that of the HBc precore sequence;

(ii) Domain II comprises about 5 to about 250 amino acid residues peptide-bonded to HBc residue 75 of Domain I in which (a') zero to all residues in the sequence of HBc positions 76 through 85 are present peptide-bonded to (b') a sequence of one to about 245 amino acid residues that contain one or more chemically non-reactive heterologous amino acid residues that render the immunogenic particles less antigenic than the native HBc particles;

(iii) Domain III is an HBc sequence from position 86 through position 135 peptide-bonded to residue 85 of Domain II; and

(iv) Domain IV comprises (a') five through fourteen residues of an HBc amino acid residue sequence from position 136 through 149 peptide-bonded to the residue of position 135 of Domain III, and (b') zero to three cysteine residues [C-terminal cysteine residue(s)] within about 30 residues from the C-terminus of the chimer molecule,

said chimer molecule (i) having an amino acid residue sequence in which no more than about 5 percent of the amino acid residues are substituted in the HBc sequence of the chimer relative to SEQ ID NO:1-6 from position 2 through 165, (ii) self-assembling into particles on expression in a host cell, ~~and~~ (iii) containing at least one N-terminal cysteine residue or C-terminal cysteine residue, and (iv) having one or both HBc cysteine residues at positions 48 and 107 replaced by another residue, while the HBc cysteine at residue at position 61 is present, said particles being substantially free of binding to nucleic acids and being more stable than are particles formed from otherwise identical HBc chimer molecules that are (i) free of any above-mentioned C-terminal cysteine residue(s) or N-terminal cysteine residue(s) or (ii) in which said cysteine residue(s) of (iii) present in a contemplated chimer molecule is(are) replaced by another residue.

19. - 27. (cancelled)

28. (previously presented) The method according to claim 18 wherein said recombinant HBc chimer protein molecule

contains one to three C-terminal cysteine residue(s) within about 30 residues of the C-terminus of the chimer molecule.

29. - 31. (cancelled)

32. (original) The method according to claim 28 wherein said recombinant HBc chimer protein molecule contains 1 cysteine residue within about 30 residues from the C-terminus of the chimer molecule.

33. (previously presented) The method according to claim 28 wherein the HBc sequence between amino acid residues 76 and 85 is present, but interrupted by said one or more chemically non-reactive heterologous amino acid residues.

34. (original) The method according to claim 32 wherein said cysteine residue is located within about five amino acid residues of the C-terminus of the chimer protein molecule.

35. - 47. (cancelled)

48. (currently amended) A method of enhancing the production of one or more of gamma-producing CD 8+, CD 4+ T cells and cytotoxic T lymphocytes against hepatitis B virus that comprises;

(a) administering to a patient chronically infected with hepatitis B virus a T cell-stimulating amount of a vaccine comprising immunogenic particles dispersed in a pharmaceutically acceptable diluent emulsion that includes an adjuvant comprised of a 2-[(R)-3-tetra-decanoyloxytetradecanoylamino]-ethyl-2-deoxy-4-O-phosphono-3-O-[(R)-3-tetradecanoyloxytetra-decanoyl]-

2-[(R)-3-tetra-decanoyloxytetradecanoyl-amino]-p-D-glucopyranoside triethylammonium salt and optionally contains ~~one or both of (a) an agonist for toll-like receptor 4 (TLR 4), and (b)~~ an agonist for toll-like receptor-9 (TLR-9), said immunogenic particles comprising recombinant hepatitis B core (HBc) chimeric protein molecules, said chimeric protein molecules being up to about 550 amino acid residues in length and containing

(i) an HBc sequence of at least about 125 of the N-terminal 165 amino acid residues of the HBc molecule that includes the HBc sequence of residue positions 4 through about 75 and about 85 through about 140, and includes an insert in the HBc immunodominant loop, said insert having a length of one to about 40 amino acid residues and containing one or more chemically non-reactive heterologous amino acid residues that render the immunogenic particles less antigenic than the native HBc particles,

(ii) one or both of (a') one to three cysteine residues at an amino acid position of the chimer molecule corresponding to amino acid position -20 to about +1 from the N-terminus of the HBc sequence of SEQ ID NO:1 [N-terminal cysteine residue(s)] in a sequence other than that of the HBc precore sequence and (b') one to about three cysteine residues toward the C-terminus of the molecule from the C-terminal residue of the HBc sequence and within about 30 residues from the C-terminus of the chimer molecule [C-terminal cysteine residue(s)],

said chimer molecule (a') containing no more than about 5 percent conservatively substituted amino acid residues in the HBc sequence relative to SEQ ID NO:1-6 from position 2 through 165, (b') self-assembling into particles that upon expression in a host cell are substantially free of binding to nucleic acids, and

said particles being more stable than are particles formed from otherwise identical HBc chimer molecules that are free of any above-mentioned C-terminal cysteine residue(s) or N-terminal cysteine residue(s) or in which a C-terminal or an N-terminal cysteine residue(s) present in a contemplated chimer molecule is(are) replaced by another residue; and

(b) maintaining said patient for a time sufficient to induce T cells activated against HBc.

49. - 50. (cancelled)

51. (currently amended) The method according to claim 48 wherein said adjuvant ~~one or both of said TLR-4 agonist~~ and said TLR-9 agonist, when present, are admixed with said pharmaceutically acceptable diluent and said immunogenic particles.

52. - 53. (cancelled)

54. (previously presented) The method according to claim 1 wherein said adjuvant includes aminoalkyl glucosamine phosphate.

55. (previously presented) The method according to claim 55 wherein said adjuvant includes squalene.

56. (previously presented) The method according to claim 18 wherein said adjuvant includes aminoalkyl glucosamine phosphate.

57. (previously presented) The method according to claim 56 wherein said adjuvant includes squalene.

58. (previously presented) The method according to claim 48 wherein said adjuvant includes aminoalkyl glucosamine phosphate.

59. (previously presented) The method according to claim 58 wherein said adjuvant includes squalene.

60. (previously presented) The method according to claim 59 wherein said emulsion is an oil-in-water emulsion.

61. (currently amended) The method according to claim 1 wherein said recombinant HBc chimeric protein molecules have ~~one or~~ both HBc cysteine residues at positions 48 and 107 replaced by another residue, and the HBc cysteine at residue at position 61 present.

62. (currently amended) The method according to claim 18 wherein said recombinant HBc chimeric protein molecules have ~~one or~~ both HBc cysteine residues at positions 48 and 107 replaced by another residue, and the HBc cysteine at residue at position 61 present.

63. (cancelled)

Please add new claim 64 as follows.

64. (new) A method of enhancing the production of one or more of gamma-producing CD 8+, CD 4+ T cells and cytotoxic T lymphocytes against hepatitis B virus that comprises;

(a) administering to a patient chronically infected with hepatitis B virus a T cell-stimulating amount of a vaccine comprising immunogenic particles dispersed in a pharmaceutically acceptable diluent emulsion that includes an adjuvant and contains one or both of (a) an agonist for toll-like receptor-4 (TLR-4), and (b) an agonist for toll-like receptor-9 (TLR-9), said immunogenic particles comprising recombinant hepatitis B core (HBc) chimeric protein molecules, said chimeric protein molecules being up to about 550 amino acid residues in length, wherein said recombinant HBc chimeric protein molecules have one or both HBc cysteine residues at positions 48 and 107 replaced by another residue, and the HBc cysteine at residue at position 61 is present, said chimer protein molecules containing

(i) an HBc sequence of at least about 125 of the N-terminal 165 amino acid residues of the HBc molecule that includes the HBc sequence of residue positions 4 through about 75 and about 85 through about 140, and includes an insert in the HBc immunodominant loop, said insert having a length of one to about 40 amino acid residues and containing one or more chemically non-reactive heterologous amino acid residues that render the immunogenic particles less antigenic than the native HBc particles,

(ii) one or both of (a') one to three cysteine residues at an amino acid position of the chimer molecule corresponding to amino acid position -20 to about +1 from the N-terminus of the HBc sequence of SEQ ID NO:1 [N-terminal cysteine residue(s)] in a sequence other than that of the HBc precore sequence and (b') one to about three cysteine residues toward the C-terminus of the molecule from the C-terminal residue of the HBc sequence and within about 30 residues from the C-terminus of the chimer molecule [C-terminal cysteine residue(s)],

said chimer molecule (a') containing no more than about 5 percent conservatively substituted amino acid residues in the HBc sequence relative to SEQ ID NO:1-6 from position 2 through 165, (b') self-assembling into particles that upon expression in a host cell are substantially free of binding to nucleic acids, and

said particles being more stable than are particles formed from otherwise identical HBc chimer molecules that are free of any above-mentioned C-terminal cysteine residue(s) or N-terminal cysteine residue(s) or in which a C-terminal or an N-terminal cysteine residue(s) present in a contemplated chimer molecule is(are) replaced by another residue; and

(b) maintaining said patient for a time sufficient to induce T cells activated against HBc.